

# FloBoss™ 107 HART® Module

The HART® (Highway Addressable Remote Transducer) module allows a FloBoss™ 107 (FB107) Flow Manager to communicate with HART devices using the HART protocol. The HART module receives signals from and transmits signals to HART devices. An FB107 can support one HART module. The module can be installed in any module slot.

The module has four input/output channels. Software configurable switches on the module board allow each channel to be set as an input or output channel. A channel set as an input can be configured for use in point-to-point or multi-drop mode. A channel set as an output can be configured for use in point-to-point mode only. Each channel has analog input capability intended for diagnostic and primary process variable measurement.

HART superimposes Frequency Shift Keying (FSK) signals on an analog signal. This technique allows digital information to be passed to and from the HART device on a 4 to 20 mA analog signal. In point-to-point mode, the analog signal is still representative of the measured variable. This mode allows communications with one HART device per channel.

In multi-drop mode, as many as five HART devices can be connected (in parallel) to each channel. Like the point-to-point mode, digital communications are superimposed on the analog signal that is used for powering the HART devices. Each HART device in multi-drop mode requires 4mA and does not represent any measured variable value. With all four channels in the multi-drop mode, the FB107 can support a maximum of twenty HART devices.

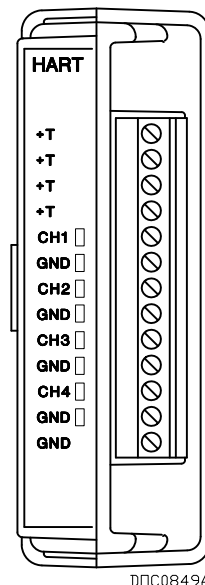
Performance and speed are greatly improved by a separate FSK modem for each channel. The FSK transmission is independent of other channels. The scan time for one channel does not affect the scan time of any other channel.

The module (with firmware version 1.10 and later) has a software-selectable 250 Ohm termination resistor on each channel.

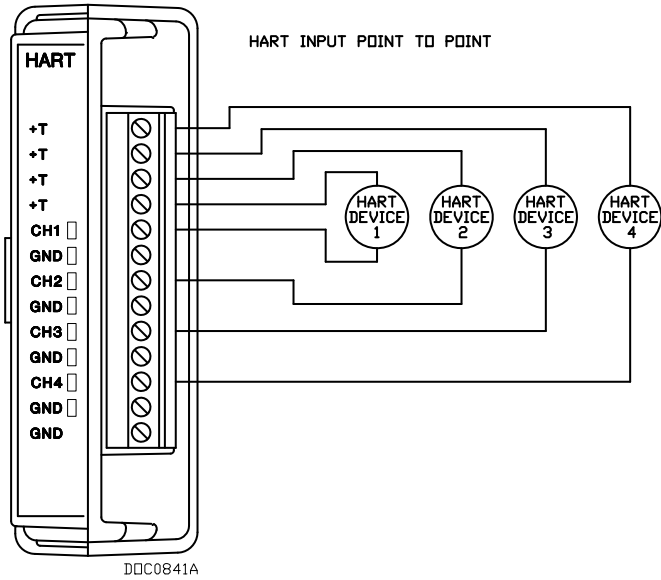
The module has a removable terminal block for convenient wiring and servicing. The terminal block can accommodate a wide range of wire gauges (16 to 24 AWG).

An FB107 unit equipped with a HART module is considered to be a HART Host (primary master) interface with a Class 1 Conformance classification. The module can be configured with ROCLINK 800 Configuration Software for use as a secondary master.

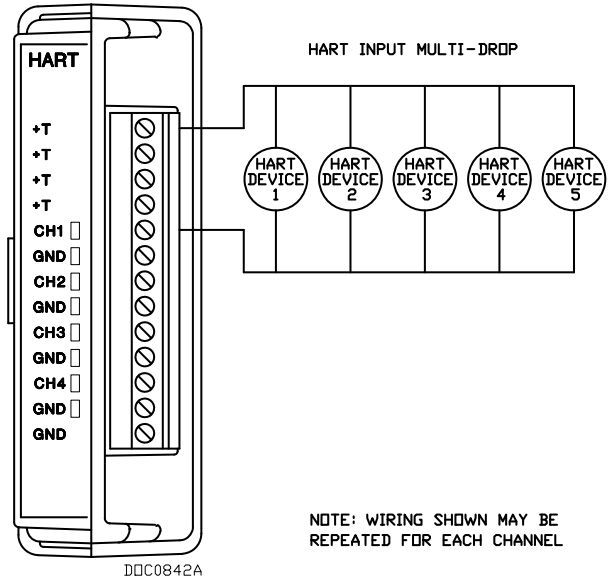
Most Universal and some Common Practice commands are supported. For a list of the commands, refer to the specifications table on page 3. The supported commands conform to HART Universal Command Specification Revision 5.1 and Common Practice Command Specification Revision 7 (HCF SPEC 127 & 151). Refer to [www.hartcomm.org](http://www.hartcomm.org) for more information on the specifications.



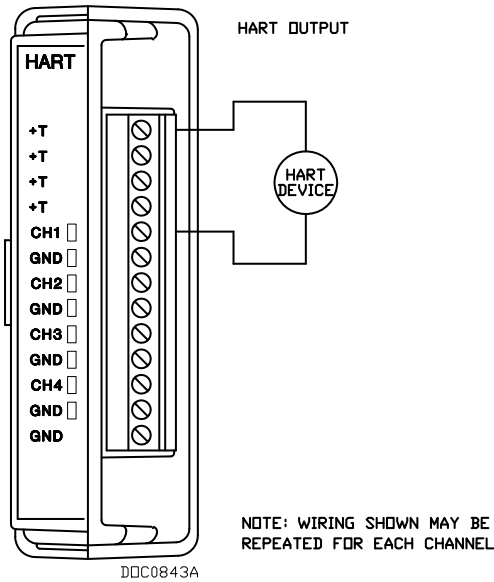
D0C0849A  
HART Module



*HART Input Point-to-Point  
Wiring Diagram*



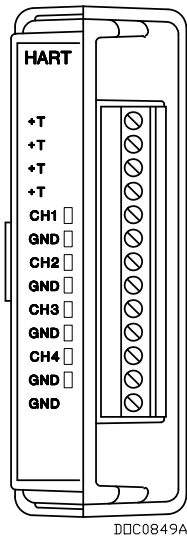
*HART Input Multi-Drop  
Wiring Diagram*



*HART Output  
Wiring Diagram*

## FloBoss 107 HART Module

### Field Wiring Terminals



Terminal	Label	Definition
1	+T	Loop Power
2	+T	Loop Power
3	+T	Loop Power
4	+T	Loop Power
5	CH1	Channel 1 input or output
6	GND	Ground
7	CH2	Channel 2 input or output
8	GND	Ground
9	CH3	Channel 3 input or output
10	GND	Ground
11	CH4	Channel 4 input or output
12	GND	Ground
13	GND	Ground

DOC0849A

### Channels

Quantity	Four channels per module, which communicate via Analog/Digital signals.
Mode	Half-duplex.
Data Rate	1200 bps.
Parity	Odd.
Modulation	Phase coherent, Frequency Shift Keyed (FSK) per Bell 202.
Carrier Frequencies	Mark 1200 Hz, Space 2200 Hz, +0.1%.

### Supported Commands

Universal	Read unique identifier; read primary variable; read primary variable and current; read dynamic variable and current; write polling addresses; read unique identifier associated with tag; read message; read tag; descriptor and date; read primary variable sensor information; read device information; write message; write tag, descriptor and date.
Common Practice	Read transmitter variables.

### Accuracy

Analog Output	Absolute accuracy <sup>1</sup> at 25°C (77°F).	0.2%
	Absolute accuracy <sup>1</sup> over operating temperature range [-40 to 75°C (-40 to 167°F)]	1.5%
Analog Input	Absolute accuracy <sup>1</sup> at 25°C (77°F).	1.5%
	Absolute accuracy <sup>1</sup> over operating temperature range [-40 to 75°C (-40 to 167°F)]	3.0%

1. Absolute Accuracy Includes: Linearity, Hysteresis, Repeatability, Stability, Gain, and Offset error.

# Technical Specifications

<b>Power</b>		
Consumption	210 mW (idle) with no HART devices connected.	
Additional loading applies for each device connected	Current draw at +T terminal (see Loop Power).	
Loop Power	+T Sensor Supply Voltage	24 V dc
	+T Sensor Supply Current	200 mA maximum at 24 V dc (each HART device typically uses 4 mA in multi-drop mode and 4-20 mA in point-to-point mode).
Over-Voltage Protection	±30 V dc, surge on any channel.	
<b>Physical</b>		
Dimensions	82.55 mm H by 25.4 mm W by 127 mm L (3.25 in. H by 1.0 in. W by 5.0 in. L).	
Weight	68 g (2.4 oz.).	
Wiring	Size 16 to 24 AWG at the removable terminal block.	
<b>Environmental</b>		
Same as the FB107 in which it is installed.		
<b>Approvals</b>		
Same as the FB107 in which it is installed.		

Bristol, Inc., Bristol Canada, BBI SA de CV and Emerson Process Management Ltd, Remote Automation Solutions division (UK), are wholly owned subsidiaries of Emerson Electric Co. doing business as Remote Automation Solutions ("RAS"), a division of Emerson Process Management. FloBoss, ROCLINK, Bristol, Bristol Babcock, ControlWave, TeleFlow and Helicoid are trademarks of RAS. AMS, PlantWeb and the PlantWeb logo are marks of Emerson Electric Co. The Emerson logo is a trademark and service mark of the Emerson Electric Co. All other marks are property of their respective owners.

The contents of this publication are presented for informational purposes only. While every effort has been made to ensure informational accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. RAS reserves the right to modify or improve the designs or specifications of such products at any time without notice. All sales are governed by RAS' terms and conditions which are available upon request. RAS does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any RAS product remains solely with the purchaser and end-user.

**Emerson Process Management**  
**Remote Automation Solutions**  
 Marshalltown, IA 50158 U.S.A.  
 Houston, TX 77041 U.S.A.  
 Pickering, North Yorkshire UK Y018 7JA

